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THE IMPACT OF STATE URBAN ENTERPRISE ZONES ON BUSINESS OUTCOMES*

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ABSTRACT

Since the early 1980s, a vast majority of states have implemented enterprise zones. This paper examines the impact of zone programs in the urban areas of six states on business outcomes, the main target of zone incentives. The primary source of outcome data is the U.S. Bureau of Census' Longitudinal Research Database (LRD), which tracks manufacturing establishments over time. Matched sample and geographic comparison groups are created to measure of the impact of zone policy on employment, establishment, shipment, payroll, and capital spending outcomes. Consistent with previous research findings, the difference in difference estimates indicate that zones appear to have little impact on average. However, by exploiting the establishment-level data, the paper finds that zones have a positive impact on the outcomes of new establishments and a negative impact on the outcomes of previously existing establishments.

AEA-JEL Classification Codes: R5, H2, L6

Keywords: Enterprise zones, Urban economic development, Evaluation

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1. Introduction

Since the early 1980s, a vast majority of states have implemented enterprise zone programs. Enterprise zones are programs that target various economic development policies towards particular blighted areas. The number and size of the zones, as well as the mix of zone designation criteria and zone incentives varies substantially from state to state. Typically, zone programs are thought of as policies to help revitalize depressed communities. As such, the goals of the programs (the reduction of unemployment, alleviation of poverty, revitalization of communities, etc.) often sound more like social policy rather than industrial policy. This is partially due to the attitudes of policy makers: "Since 1980 federal policy has looked at cities as places where many poor people live, rather than as efficient sites of production for the leading industries of the twenty-first century." (Sclar and Hook, 1993; 48) Whatever the goals, the implementation of zone policy is focused largely on affecting business decisions.

In order to better assess the impact of enterprise zones on business decisions, we focus on manufacturing establishments in the urban enterprise zone programs of six states: California, Florida, New Jersey, New York, Pennsylvania, and Virginia. The large cities in these states, as everywhere, have been losing employment to more suburban areas. If enterprise zone incentives are successful at removing some of the barriers to investing in cities, they should help to bring some of those jobs back. Such increased activity is potentially beneficial for both the residents, who might see increased jobs, wages, and property values, and for the new and existing businesses, who may be able to increase their profits.

Previous evaluations of enterprise zone programs have found mixed results. Although a number of interviews and surveys have shown some success with job creation in enterprise zones, more careful examinations using statistical methods to carefully create appropriate comparison groups have found mixed results (Wilder and Rubin, 1996). Using data form New Jersey zones, Rubin (1990) found that the benefits of the zone programs exceeded their costs. Papke (1993, 1994) found some evidence of a positive impact of the Indiana enterprise zone program using annual time series data from zone and non-zone Indiana cities. Boarnet and Bogart (1996), however, used a similar method and found no evidence that the New Jersey enterprise zone program increased economic activity in the designated cities. Dowall (1996) analyzed two California programs using shift share analysis and also found little impact attributable to zones. Alm and Hart (1998) calculated difference–in-difference estimates for the

Colorado zone program and found mixed results for employment and income outcomes. In a national study of cities with populations less than 50,000, Engberg and Greenbaum (1997a) found that enterprise zone policies had a small impact in moderately distressed cities but not in severely blighted cities. In a study of urban enterprise zones in three states, Engberg and Greenbaum (1997b) found that zones did have some positive impacts on home ownership and occupancy rates, but that the zones also had some negative impacts on labor market outcomes. In a study of housing market outcomes in the urban areas of six states, Greenbaum and Engberg (forthcoming) found that zones have, at best, no impact on housing market, income, or employment outcomes. Bondonio (1998) found that, controlling for the monetary value of the incentives, zones had no impact on employment outcomes in fives states.

Short of using surveys or interviews, which are subject to the biases of respondents (Bartik, 1991; Blair, 1995), it has been difficult to access time-varying establishment-level data. Without such data, all of the outcome measures are averages across all firms within a geographic boundary. By using establishment-level data, changes in employment levels and other variables can be attributed to new firms, ongoing firms, or firms that have closed. We find the distinction to be important and show that enterprise zones have different impacts on the different types of firms.

The primary source of outcome data is the U.S. Bureau of Census' Longitudinal Research Database (LRD). Because each manufacturing plant in the LRD is assigned a unique identification number, the LRD data allows establishments to be tracked over time. All outcomes are measured at the U.S. Postal ZIP code level. When estimating the impact of the zone incentives, care must be taken to distinguish outcomes that are a result of prior economic conditions in the zone areas from outcomes that can be attributed to the zone policy. To help identify these outcomes, we create matched sample comparison groups of areas that have similar economic conditions but are not granted enterprise zones.

The remainder of the paper is organized as follows. The second section will examine the importance of measuring changes in business outcomes. In the third section, we discuss how enterprise zones are expected to affect business outcomes. Section four describes the data sources, section five presents descriptive statistics, section six describes the econometric analysis and results, and section seven presents the concluding remarks.

2. Why is it important to look at business outcomes?

In order to understand whether enterprise zone programs are able to help revitalize urban neighborhoods, business outcomes must be studied. For many of the same reasons that people are leaving blighted neighborhoods, businesses are leaving. This section examines why businesses are leaving and why retaining and attracting businesses is an important goal of most zone programs.

2.1 Businesses are moving out of central cities

Although the overall economy has been growing since 1991, central business districts have still been losing jobs. The U.S. Department of Housing and Urban Development (1997) used U.S. Census data to examine job patterns in 77 U.S. cities. They found that between 1991 and 1993 cities lost jobs while suburbs grew by more than 10 percent. When it comes to start-ups, the divergence is even more pronounced. During the same 1991 to 1993 period, 97 percent of new business establishments located in the suburbs while only 3 percent located in the cities. It is not just "good" jobs that are moving. HUD found that in the early 1990s, 87 percent of new jobs in lower-paying and lower-skilled service and retail sectors were created in the suburbs. There are a number of reasons why businesses are shying away from inner cities.

Part of the reason why businesses are moving is that people have been moving out of the inner cities for a long period of time. Although more and more people are moving into metropolitan areas (MSAs), fewer and fewer are living in the central cities. Around 78 percent of the U.S. population lived in MSAs in 1990 compared to around 55 percent in 1940 (Mills and Lubuele, 1997). In 1950, nearly 70 percent of the MSA populations lived in the central cities, but, by 1990, 60 percent lived in the suburbs (Brophy, 1993).

In many cases, firms are leaving inner cities for the same reasons that people are leaving: congestion, high crime rates, increasing tax burdens, environmental problems, and aging infrastructure. Whether directly or indirectly, these factors all work to raise the cost of doing business in the inner city. Congestion and aging infrastructure lead to longer commutes and more expensive shipping costs. Locations in and near high crime areas put firms' property and employees at risk, and this leads to higher security and insurance costs. "Indeed, as long as business investors regard urban areas as dens of crime and decay, they will channel their money elsewhere. In many cases, that elsewhere is the suburbs." (Howell and Konatich, 1995; 98)

For some businesses, location of customers may be less important than the location of employees. For example, for many back office operations, it may not be necessary to be located near customers or suppliers. If that is the case, the location of employees weighs more heavily in the location decision. Also, with the advent of faster and better means of communication, location sometimes becomes less strategic. It may make more sense to place an office along an important highway near where many of the car owning, educated workers live. Indeed, in the last 25 years, a number of suburban office clusters have grown quite large (Mills and Lubuele, 1997).

Once people start to move out of cities, trends develop that are difficult to break. As the population in a city declines, the tax burdens on those who remain increase. This works to encourage more people to move out. As more and more people move out, the loss of workers and increasing tax burdens work to cause businesses to follow (Butler, 1991).

2.2 Attracting businesses is a goal of economic development policy

Since enterprise zone incentives are targeted primarily at influencing business decisions, one measure of zone success is whether zones do alter business decisions. Successful zone incentives will propel businesses to avoid leaving, expand in, move to, or start up inside the zone boundaries. In order for businesses to consider a zone area an attractive place to locate, zone incentives must overcome some of the aforementioned market barriers. Successful incentives will therefore be ones that that lower costs enough so that investment inside the zone is at least as profitable as investment outside the zone.

The attraction of businesses to zone areas may be desirable both for residents and for businesses in the area. For residents it may mean that jobs are more plentiful or more proximate, and, for property owners, it may lead to increased wealth. For businesses, too, there may be advantages to attracting other bushiness to the area.

2.3.1 Good for residents

The main goal of zone policy is usually to help improve the lives of the zone residents. Policies, however, are directed at businesses. Therefore, the aim is to improve life in zone areas indirectly through the promotion of zone business activity. Ideally, any benefits that arise from the zone activity would flow to zone residents, but that need not always be the case. Non-

residents may commute in to take some of the new jobs and absentee landlords benefit from any increases in property values.

The main benefit for residents is jobs. Zone incentives are structured to retain existing businesses that otherwise would have left and to lure new businesses to the zone. It is hoped that these retained and new businesses would employ more zone residents than would be employed absent the zone incentives. If there is some redistribution of jobs from affluent to distressed areas, there may be efficiency gains as jobs shift to people with much lower reservation wages (Bartik, 1991). Therefore, there may be efficiency gains even if there is no direct impact on overall economic output. These efficiency gains are more likely to be present for inter-MSA movement of activity rather than intra-MSA movement.

Clearly, for the residents to benefit there needs to be a skills match - the new jobs need to be ones for which zone residents are qualified. There is some anecdotal that in cases in which the job skill requirements are beyond a high school education, employers are having difficulty finding qualified workers from within the enterprise zones (Balaban, 1997).

One of the reasons for geographically targeting the incentives is a spatial mismatch problem (Kain, 1968). When workers do not live where the jobs are and there exist physical, informational, or social barriers, then it may be necessary to bring the jobs to the people.

Beyond jobs, residents may benefit from the zone incentives if they are property owners. If zone incentives are successful, then the price of land in the zones should be bid up, thus benefiting landowners (Erickson and Syms, 1986; Engberg and Greenbaum, 1997a, 1997b).

Finally, as consumers, zone residents can benefit from zone policies. Markets in inner cities are frequently poorly served, particularly in the areas of retailing, financial services, and personal services (Porter, 1995). Even if zone polices lead to a shifting of existing retail establishments from nearby non-zone areas, this might be a desirable outcome for many zone residents.

2.3.2 Good for businesses

The benefits of bringing business back to urban cores include agglomeration economies, input cost reductions, increased transportation efficiencies, greater access to underutilized labor pools, lessening of some congestion, and taking advantage of the “information” economy.

If a business establishment takes advantage of zone incentives and moves into the zone, that firm benefits from the reduced costs brought about by the program incentives. That firm also benefits by its proximity to other firms in similar industries. Even existing firms that do not

receive the program incentives may benefit from the agglomeration economies that arise when establishments in similar industries move close by (Henderson, 1994). As suppliers and customers move close by, transportation costs can be reduced, which can also translate into cheaper input costs. This may also reduce some of the congestion on local highways that is caused as businesses move further and further away from urban cores. Beyond the direct reduction in costs, agglomeration economies may produce positive externalities do to technical transfers, the sharing of common skilled labor pools, and through the mutual attraction of customers to a particular area.

Finally, by locating in the centralized urban core, firms gain closer access to important labor and product suppliers. By moving into zone areas, firms gain access to an underutilized labor market that they may not have realized existed. Inner city residents tend to be hard working. Plus, giving people jobs may lead to higher skills and wages over time (Porter, 1995). Further, moving closer to customers and suppliers allows firms to better take advantage of the information economy and just-in-time-production (JIT). Recent advances in information technology have allowed producers and merchants to know exactly what and when they need deliveries. With JIT production, the deliveries of intermediate production goods are made as they are needed, and inventories are kept to a minimum. As more producers have shifted to JIT production, it has become more advantageous for suppliers to be located nearby.

2.3.3 Good for the community

To summarize, bringing new businesses to the zones can be good for whole community. Furthermore, the attraction of a new firm to a community can often create momentum for further growth and can help insure that the firm's location decision was not a temporary one. After a firm locates in a particular area, it gradually adjusts to the local environment. The community develops around the firm, too, in a process of coevolution (Blair, 1995). These self-reinforcing actions make it more difficult for a firm to leave and make it more painful for the community if it does.

3. Expected zone impact

The success of zone incentives can be measured by their impact on business location decisions, on business output, and on the prices of factor inputs. This section outlines the expected impact of zones, then concludes with a section addressing whether businesses will end

up being better off with the zone subsidies. After all, one would expect to see a new equilibrium established in which the profit levels for plants in the same industry are the same for establishments inside the zone and just outside of the zone.

3.1 Business locations

One of the immediate goals of most of the states' zone programs is to influence business decisions. Zone coordinators attempt to retain existing firms and attract new ones. Successful zone incentives should lead to both an increase in business formation and a reduction in business exits inside zones relative to outside zones. In addition, the zone policies should lead to more business activity inside the zone post-designation. Increased sales, employment, payroll, and capital expenditures would all be evidence of increased activity.

It is important to keep in mind that zone incentives are only one of many factors that affect firm location and investment decisions. Some of the other factors that influence location decisions are quality of life, government incentives, local business climate, site costs, political climate and stability, and energy costs (Blair, 1995). Indeed, a number of studies have shown that tax incentives may play only a marginal role in business location decision-making (Due, 1961; Papke, 1993). This may be because taxes often are a small portion of overall business expenses. Also, tax breaks are somewhat plentiful and the zone tax breaks may do little to differentiate a zone from any other location (Elling and Sheldon, 1991).

Further, it may be the case that tax incentives play the greatest role only at the margin. That is, incentives may be most important when all other factors that go into a business location decision are approximately the same. For example, it is conventional wisdom that zone incentives may be more important for a firm trying to decide between different locations in the same city than for a firm deciding between different locations in different cities. Many of the states do prohibit existing establishments from moving a short distance just to take advantage of the zone incentives, but the state programs do encourage those firms to expand into the zone areas.

A less glamorous goal of enterprise zone legislation is the retention of existing establishments. Although it has been argued that zone tax incentives may have only a marginal impact on the location decisions of new firms, Rubin and Wilder (1989) report that previous studies have shown that development incentives play a more central role in the investment decisions of existing zone firms. An establishment's decision to keep its doors open or to remain

in its current location rather than moving is much less headline-grabbing news than that of a firm deciding to move into the zone. Retention is less glamorous, but just as important as attraction. Retention keeps land values from falling, and it helps maintain the coevolution of the area. If zones are successful at retaining businesses, then establishment death rates and relocations will be lower in enterprise zones than they would have absent the zone legislation. Use of the establishment-level data allows the examination of whether the impact of zones is different on existing firms than on new establishments.

3.2 Factors of production

The enterprise zone incentives are likely to affect the prices and usage of businesses factor inputs. This will happen for two reasons. The first is that the incentives are likely to affect the relative prices of inputs. Second, capitalization of the zone incentives will cause the prices for immobile factors of production to rise.

Enterprise zone incentives are likely to change the relative prices of inputs. If the zone tax breaks favor one factor of production over another, there is likely to be substitution towards the factor that is more heavily subsidized. If labor is subsidized, that should work to raise zone wages, while if capital is subsidized, wages may fall. Whether price or quantity is more affected depends on elasticity. If the supply of labor is inelastic when labor is subsidized, the actual change in the number of employees may be small (Papke, 1993). Papke also points out that most of the empirical evidence has found a low elasticity of labor supply, so both labor and capital subsidies should have a larger impact on wages than on employment levels. The supply of labor may be even more inelastic in the enterprise zone communities where the skill levels of unemployed workers are not adequate for new jobs.

In many states, the zone establishments must meet certain eligibility criteria in order to qualify for the zone incentives. These criteria include requirements that firms hire certain people or that firms make certain investments. The purpose of the eligibility criteria is generally to both better target the incentives and to prevent the rewarding of business activity that already exists. Note that although these criteria may prevent the wasteful subsidization of existing activities, the criteria may make it very difficult for businesses to qualify for zone incentives (Balaban, 1997). If it is the case that strict eligibility criteria exclude many firms, then the individual zone incentives may end up having little impact.

The other way in which the prices of factor inputs may be affected is through the capitalization of the zone incentives. As incentives are offered, assets inside the zone become more valuable. Factors such as capital are highly mobile and can easily move into the zone if opportunity presents itself. However, other factors such as land are immobile. As demand for immobile factors increases due to the zone incentives, their price is likely to rise.

In the face of zone incentives, it is expected that the factor prices in a zone will be bid up until the rate of profit inside the zone is equal to that just outside of the zone. Even if factor prices rise enough to keep profits constant, the lower taxes and higher land prices should serve to attract businesses that are more capital-intensive. Thus, land users will likely substitute capital for land, and the amount of capital invested in the zone should increase (Bartik, 1991).

3.3 Will businesses be better off?

We have argued that a number of things will happen if zone incentives are successful at affecting business decisions. For residents, the increased level of business activity should raise wages, increase the number of jobs that are within an easier commute, raise the value of zone property, and improve neighborhoods. For businesses, there is some ambiguity about whether enterprise zone policies make firms more competitive. The level of business activity should increase in the zones, but the cost of land and labor will also likely increase. To assess whether establishments are better off, three questions must be addressed. Are costs reduced, are firms more efficient, and what is the fate of businesses on the periphery?

First, do zones reduce business costs? As was argued above, zone incentives are likely to lead to higher factor costs, particularly for factors of production that are immobile. Businesses are likely to continue to move into zones until costs rise enough to make doing business inside the zone just as profitable as doing business outside of the zone. These increased direct costs must be measured against the external economies that are generated from clustering and agglomeration efficiencies.

Second, are businesses more efficient as a result of the zone incentives? The distortion of prices due to the zone incentives is likely to affect the usage of factor inputs. This can be measured by comparing the usage of factors of production with similar, non-zone establishments. These distortions may not be harmful, however, if the zone incentives work to ameliorate some market failures.

Third, what is the impact on businesses on the periphery? If zone policies place firms just outside of the zone boundaries at a competitive disadvantage, this damage might outweigh any good the policy does inside of the zone. On the other hand, there is reason to believe that businesses outside of the zone boundaries might not be greatly harmed. Indeed, businesses in the suburbs are likely to benefit by a strong urban core and the cessation of urban blight.

4. Data

4.1 Enterprise zone data

The data used in the analysis come from a variety of primary and secondary sources. Information about which municipalities have zones, the designation dates and the program features were collected from the coordinating agencies of the respective states. Detailed descriptions of program goals, incentives, eligibility criteria for participating businesses and zone designation criteria were compiled from various documents provided by each state's program office and from HUD's *State Enterprise Zone Update: Summaries of the State Enterprise Zone Programs* (1992).

Many of the state and federal enterprise zones are located in rural communities, but we limit the focus of the paper to the large metropolitan areas of six states. These six states all started their zone programs early enough that outcome data could be collected to evaluate their performance. Also, all of the states had a large enough number of zones that statistical analyses could be performed. However, we also decided to limit our sample to states that had more traditional enterprise zone programs in the sense of not designating hundreds and hundreds of zones. Louisiana alone has almost two thousand zones! The decision to limit our focus to only urban zones represents our particular interest in exploring the impact of enterprise zones on business outcomes. With urban areas, a business faces the decision whether to locate inside the zone or to locate elsewhere in the metropolitan area. Since the rural zones are often much larger, a business deciding to locate in a particular small or medium-sized city that has a zone decides to move into the zone by default.

We analyze the impact of enterprise zones at the U.S. Postal ZIP code level. In many cases, enterprise zones do not share boundaries with common geographic entities such as census tracts, ZIP codes, municipalities or counties. The choice of ZIP codes represents a compromise based on the ability to identify ZIP codes that overlap enterprise zones and the availability of ZIP code

information on business establishments. A ZIP code is categorized as a zone area if any portion of the ZIP code overlaps with a designated zone. Therefore, the analysis captures the impact of zone policies on the area immediately surrounding the zone as well as on the area inside the official boundaries of the zone.

The source of ZIP code zone status varied from state to state. For example, the director of the Virginia program provided a list of census tracts covered by each zone. The corresponding ZIP codes were obtained from MABLE/GEOCORR (http://plue.sedac.ciesin.org/plue/geocorr/), a web-based geographical correspondence engine that determines the degree of overlap between two spatial units. A few states, such as Florida, provided a report that contained census block group maps with each zone outlined (State of Florida, 1993). For most states, there was no central source for zone maps. Maps were obtained by contacting each of the local zone administrators. For Florida and Pennsylvania zones, ZIP codes were obtained by matching their boundaries on paper maps with Geographic Information System (GIS) ZIP code coverages. For the rest of the states, we contacted a person at each zone. That person was able to either provide a list of ZIP codes or a map that could be used to match up with the GIS ZIP code boundaries.

Housing, demographic, income and unemployment information comes from the 1980 Decennial Census STF3a files. These data were allocated to ZIP codes using allocation factors from MABLE/GEOCORR.

4.2 Business data

The outcome data come primarily from two different data sets released by the U.S. Census Bureau. The first is an annual count of establishments in all industries in different employment size classes and the second is a panel of manufacturing establishments.

4.2.1 SSEL data

Our first source of business data is an unofficial Census Bureau tabulation of the Standard Statistical Establishment List (SSEL). The SSEL is the Census Bureau's master address list of business establishments that is maintained for the economic censuses and employer surveys. The SSEL tabulation includes annual counts of establishments categorized by U.S. Postal ZIP code, cross-tabulated by four-digit SIC and employment class size. This is the same data as *County Business Patterns*, but aggregated to a more refined geographic level. We aggregate the employment data for the different size classes to the two-digit industry level for each year. By fitting a Weibull distribution to the establishment employment size counts, an implied average

employment by size class is calculated and used to estimate the employment in each ZIP code each year for each two-digit industry. To estimate the average ZIP employment, I multiply the size class averages by the number of establishments in each size class in each ZIP and sum over the size classes. Although this unofficial ZIP code tabulation has not been subjected to the Census Bureau's high quality control checks, it has proven to be very informative in previous research.

4.2.2 LRD data

In order to examine business activity in the manufacturing sector in more detail, we use the U.S. Bureau of Census' Longitudinal Research Database (LRD). The LRD, which contains data on U.S. manufacturing plants with five or more employees, was developed by the Census Bureau to better investigate changes in the U.S. manufacturing sector over time. The LRD data is made up of the quinquennial Census of Manufactures (CM) and the Annual Survey of Manufacturers (ASM). Because each plant location is assigned a unique identification number, the LRD data can be used to track manufacturing establishments over time. The data available for each establishment include location, output quantities, and detailed information on the factors of production, such as the levels of capital, labor, energy and materials used as inputs.

The LRD data contains CM data from 1963, 1967, 1972, 1977, 1982, 1987, and 1992 on 300,000-400,000 plants and ASM data from 1972 to 1995 for a probability sample of 50,000 to 70,000 plants each year. The ASM panels are selected from the CM universe two years after each CM. The largest plants, those with at least 250 employees, are included in the ASM panel with certainty. For the smaller establishments, the probability of inclusion into a panel rises with plant size. For plants smaller than 250 employees, births and deaths can only be measured within an ASM sample. Therefore, we limit our analysis to two ASM panels: 1984-1988 and 1989-1993. For more information about the LRD data, see the technical appendix in Davis, Haltiwanger, and Schuh (1996).

5. Descriptive statistics

The analysis is limited to the ZIP codes in the largest MSAs of California, Florida, New Jersey, New York, Pennsylvania, and Virginia. By focusing on large MSAs, we are able to better examine the impact of enterprise zone policy in areas that face similar economic challenges. The ZIP codes that are included are all part of three digit ZIP codes that have more than half of their population inside of an MSA or CMSA with a population of at least 400,000. Table 1 shows the list of 28 MSAs that meet the population criterion, their populations, the number of ZIP codes, and the subset

of ZIP codes in the MSA that contain an enterprise zone. Two of the MSAs do not have zones. Approximately ten percent of the urban ZIP codes either entirely or partially contained an enterprise zone. The map in Figure 1outlines the five-digit ZIP codes that are included in the 28 MSAs. The map in Figure 2 zooms in on the northeast portion of the country and shades in the zone ZIP codes.

The six states phased in their urban zones throughout the 1980s and early 1990s. Table 2 presents information about the zone starting dates. Pennsylvania designated its earliest urban zones in 1983. Florida was the only state to designate all of its zones in the same year, 1986.

Table 3 presents a list of the variables, along with their means and standard deviations, that are expected to influence where states place their zones. Because state governments continuously face fiscal constraints, they tend to devote scarce resources to areas in greatest need. Based on the stated designation criteria, states place their zones in areas where the economy, residents, or housing and infrastructure are hurting. The GDP implicit price deflator is used to deflate all monetary values (Council of Economic Advisors (U.S.), 1997). The base year is 1992.

Table 3 is broken down into three types of variables. The first group of variables are 1980 Decennial Census variables. Population density, per capita income, poverty rate, unemployment rate, percent of the population with a high school diploma, and percent black or Hispanic measure socio-economic conditions. The health of the housing market is captured by census variables that measure average housing value, average rent, and owner occupancy rates. The second group of variables measures the business climate and comes from the 1982 Census of Manufactures. The business measures include employment density, total employment, percentage of that employment that are production workers, production worker hourly wage, total value of shipments per employee, value added per employee, cost of contract work per employee, new building expenditures per employee, new machinery expenditures per employee, building rents per employee, energy intensity (cost of fuels and purchased electricity (measured in current dollars) divided by total shipments), and capital intensity (the end-of-the-year book value of structures and machinery divided by total employment).[1] The last set of variables include the enterprise zone indicator (=1 if any part of the zip code was ever designated as a zone), and measures of the change in manufacturing employment and number of manufacturing

[1] The measures of capital intensity and energy intensity are similar to those used by Davis, Haltiwanger, and Schuh (1996).

establishments in the two years prior to the year the first zone was designated in a state.[2] It is likely that the areas selected to become enterprise zones were the areas performing particularly poorly prior to the adoption of the zone legislation. These last two variables were measured with the SSEL data.

Table 4 breaks down the means of the socio-economic and housing measures by enterprise zone status. Enterprise zone ZIP codes were more densely populated than non-zones in 1980. Zones also had lower per capita income, higher poverty and unemployment, lower high school graduation rates, and higher percentages of minority residents than non-zones. In addition, non-zones had higher home values, rental prices, and owner occupancy rates than zones.

As can be seen in Table 5, non-zones had greater growth in manufacturing employment and growth in the number of manufacturing establishments than in the zones, although the difference was significant only for the difference in the number of establishments. The number of observations was slightly less for these two variables because of differences between the SSEL and the LRD in the ZIP codes for which data exists. Regressions are estimated only on ZIP codes that are in both data sets.

Enterprise zone ZIP codes are well-represented in the manufacturing industry. As Table 6 shows, establishments in 1982 in zone ZIP codes had significantly greater employment, a greater percentage of production workers, higher production wages, greater value of shipments per employee, lower cost of contract work, lower rents, greater energy intensity, and more capital intensive production than the did establishments in non-zone ZIPs. Based on the 1982 levels, zone ZIPs do not look like they are particularly bad places to do businesses. Two points must be kept in mind. The first is that the data are only for manufacturing sector, not one of the fastest growing sectors of the economy based on employment. The second point is that levels can be misleading. It is also important to consider the changes. As Table 5 showed, the number of manufacturing establishments and employment grew more slowly in the years preceding zone designation.

Table 7 shows that over the decade of the 1980s, zone ZIP codes continued to under-perform the non-zone areas. Among the census variables, population density grew more rapidly in the zone ZIPs. In all of the socio-economic and housing measures, the non-zone ZIPs

[2] The exception is Pennsylvania. Pennsylvania designated its first zone in 1983, and the first year of the available SSEL data is 1981. Therefore, the two-year change variables for Pennsylvania were calculated

performed better than the zone ZIPs. For example, poverty and unemployment rates dropped in the non-zone ZIPs, while they rose or remained constant in the zone ZIPs. No clear picture emerges from the business data. In the zone ZIPs, employment density, percentage of production workers and new machinery expenditures fell less, and shipments and value added grew more rapidly than in the non-zone ZIPs. However, in the non-zone ZIPs, employment per establishment, production worker wages, new building expenditures, and energy intensity fell by less than in the zone ZIPs. Also, the cost of contract work fell in the non-zone ZIPs, while it increased in the zone ZIPs, and building rents and capital intensity both grew more rapidly in the zone zips.

6. Econometric analysis

In order to evaluate whether enterprise zones have an impact on business outcomes, we employ a difference-in-difference approach. For the treatment group of ZIP codes that get enterprise zones, we measure the difference in the growth rates between a period before and after zone designation. We measure the difference in growth rates for the same periods of time for a comparison group of ZIP codes that never get zones, then measure the difference between the two differences. If the enterprise zone incentives are effective, the pre-to-post-designation growth rate in the enterprise zones should be larger than the corresponding growth rate in the comparison ZIPs. In order for the difference-in-differences estimate to be meaningful, the proper comparison group must be constructed. After all, it doesn't make sense to expect a blighted ZIP code that receives an enterprise zone to perform as well as an affluent ZIP code that would never qualify for an EZ.

6.1 Comparison groups

The first step in modeling business outcomes is the selection of a proper set of comparison areas. The set of comparison ZIP codes should have initial characteristics that make them likely candidates to be designated as an enterprise zone (Friedlander, et al., 1997). The decision to limit our analysis to only ZIP codes located in urban areas was the first step in creating suitable comparison ZIPs. Using the set of urban ZIP codes, we establish two different types of comparison ZIP code groups. The first method draws upon Rubin's work (1973, 1979) to select a set of matched ZIP codes that are chosen based upon initial characteristics. The second method

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between 1981 and 1983 rather than between 1980 and 1982.

selects comparison groups based only on geography – the outcomes in the zone ZIP codes are compared to outcomes in ZIP codes within and beyond a five-mile radius.

To help ascertain which attributes of an area are important to states when they designate zones, we estimate a model of the probability that a ZIP will be designated a zone as a function of the pre-designation characteristics (X_i). Later, we use these predicted probabilities to generate an appropriate set of comparison ZIP codes.

$$PZ_i = \Pr(EZ = 1 \mid X_i) = probit(X_i \boldsymbol{b}) \qquad \textbf{(1)}$$

Table 8 presents the estimated coefficients from stepwise probit regressions in which the probability that a ZIP code will be designated a zone is modeled as a function of the 1980 and 1982 characteristics. The forward selection stepwise regressions only load the variables that best help to predict zone status in each state. The selection criteria were set such that variables were added to the model if P-value<0.15 and variables were removed from the model if P-value>0.35. The variables not loaded are listed at the bottom of Table 8.

The diversity of the variables that are loaded in the six states as well as the differences in the coefficients are an indication that the characteristics that lead to designation in each state are not the same. Among the census variables, all of the states targeted ZIPs with greater population density. They all also clearly targeted areas exhibiting economic distress. For example, lower housing values or rental values lead to an increased probability of designation in all of the states. Among the business variables, states tended to target areas with fewer workers per square kilometer, but also places with more workers per establishment.

For each ZIP, six predicted values were calculated using the coefficients from each state's probit regression. Table 9 presents a correlation matrix of those predicted values. States that have a high correlation, such as the correlation of 0.79 between Virginia and Pennsylvania, use similar criteria for selecting their zones. States that have lower correlations, such as the correlation of 0.40 between New Jersey and Florida, have less similar designation criteria.

The estimated probability of zone designation in Equation 1 can be thought of as a propensity score (Rosenbaum and Rubin, 1983, 1984). As Dehejia and Wahba (1988) showed, the propensity score can successfully be used to help create a matched sample of comparison ZIP codes. For each state, we match every zone ZIP with the non-zone ZIP that has the smallest squared difference in propensity scores. The same non-zone ZIP can be used as comparison ZIP for multiple zone ZIPs.

Before selecting the matched sample of ZIP codes, a number of ZIP codes were eliminated from consideration. This was done in order to improve the matching. The most prosperous ZIP codes are unlikely to ever designate zones; therefore, they make poor comparison ZIPs. For the least prosperous ZIPs, it is unlikely that there will be many similarly-depressed ZIPs that were not granted zone designation. When there are no good comparison ZIPs for the most distressed zone ZIPs, the same, most distressed, non-zone ZIP in that state would be matched to all of the most distressed zone ZIPs. For most of those zone ZIPs, that match would not be very good.

The predicted designation probabilities calculated from each state's own location equation was used to eliminate the most well-off and most distressed ZIP codes. To eliminate the most prosperous ZIPs, we eliminate all ZIPs that have designation probabilities lower than the 1st percentile of the predicted designation probability among the zone ZIPs. The number of prosperous ZIP codes that are eliminated in each state and the average designation probability for those ZIPs are listed in the first two columns of Table 10. To eliminate the least prosperous ZIPs, we eliminate all of the ZIPs that have designation probabilities greater than the 99th percentile of the propensity scores among the non-zone ZIPs. The eliminated sub-sample is shown in the last two columns of Table 10. The middle two columns of the table represent the treatment zone ZIPs that will be used and the pool of potential non-zones ZIPs from which the matched comparison zips are chosen. Even after eliminating the tails, not all of non-zones ZIPs are suitable comparison ZIPs, as can be seen by the higher mean propensity score for the zone ZIPs.

As Dehejia and Wahba (1998) noted, the propensity score is particularly nice because it summarizes all of the covariates into a single number, which makes it easier to examine the "comparability" of the comparison group to the treatment group. Table 11 shows the propensity score means for the treatment zone ZIPs and for the matched sample of non-zone ZIPs. For the matched sample, the mean propensity scores in each state are almost identical to those in the treatment group. Based on the propensity scores, the matched sample appears to be a suitable comparison group.

6.2 Matched-Sample Outcomes

The difference-in-difference analysis is performed on five growth measures. Total employment is used to measure whether zones create and retain jobs. Total dollar value of shipments provides a measure of whether plant output has been affected. Production worker

payroll is used to provide an indication of how payroll has changed. This is important to measure, because payroll could expand even as employment falls if higher-paying jobs are replacing lower-paying jobs. Expenditures on new buildings and machinery are an indicator of whether zone incentives encourage increased investments. Ideally, the capital intensity measure used in the probit regressions would be used to better measure capital intensity relative to labor inputs. Unfortunately, the Census Bureau stopped measuring the capital stock after 1989, so only new capital expenditures can be measured. The number of establishments is an indicator of whether zones have been effective at attracting and retaining establishments. The means and standard errors of the five variables at the ZIP code and establishment levels are listed in Table 12. All of the variables are weighted by the inverse probability of selection into an ASM panel.[3] The dollar figures are measured in 1992 dollars or thousands of 1992 dollars. At the ZIP code level, payroll is measured by the mean hourly production worker wage times the total number of employees.

For employment, shipments, payroll, and capital expenditures, annual growth rates for each ZIP code are calculated. In addition, the LRD data allows us to decompose those growth rates into changes due to four "types" of establishments: births, deaths, growing establishments, and shrinking establishments. Growth is defined

$$G^{j}_{it} = \frac{E^{j}_{it} - E^{j}_{it-1}}{E_{it-1}} \quad \textbf{(2)}$$

where G^{j}_{it} is the growth rate for ZIP i in year t. E is the outcome measure, such as employment, and j represents the type of establishment. The numerator is the difference between this year's and last year's employment in a ZIP for a particular type of establishment, while the denominator is the sum of all employment for all establishments in a ZIP in the previous year.

Establishments are disaggregated into the different types based upon the previous year's employment. Births are defined as establishments that have positive employment in the current year, but had zero employment in the previous year. Deaths are defined as establishments that have zero employment in the current year, but had positive employment in the previous year. Deaths include both shutdowns and moves. An identification number attached to a physical location, rather than to a particular plant, identifies establishments in the LRD. Therefore, over

[3] The analysis was also performed using unweighted data. None of the conclusions changed, and the unweighted results are not reported.

time, the same "establishment" could be classified as both a death and a birth. Growing establishments are defined by establishments in the current year that have had stable or positive total employment, shipment, payroll, or capital spending growth since the previous year. Similarly, shrinking establishments are defined by establishments had greater total employment, shipments, payroll, or capital spending in the previous year.

For the counts of the number of establishments of each type, growth is defined similarly:

$$G^{j}_{it} = \frac{N^{j}_{it}}{N_{it-1}} \quad \textbf{(3)}$$

where G^{j}_{it} is the growth rate for ZIP i in year t for establishment type j. N is the number of establishments.[4]

Because all of the establishment classifications are based upon values in the previous year, establishments in the first year of each ASM sample, 1984 and 1989, cannot be classified. This really is not a problem since growth rates cannot be calculated for the first year of a panel anyway (the growth rates, too, depend on the previous years' observations). Therefore, growth rates are only calculated for years two through five of each panel. Finally, all of the growth rates are weighted by their lagged values. This prevents the smaller ZIPs from having inordinate influence.

Table 13 presents all of the ZIP code growth rates broken down by the establishment type (birth, death, grow, shrink, and total) and by enterprise zone status. For both the non-zone and zone zips, the growth rates are separated into mean pre-zone designation and post-designation growth rates. For the non-zone ZIPs, the designation date is the date of designation of the matched zone ZIP. For each variable and establishment type, the overall growth rates are also reported.

As an example, consider employment growth. Employment growth fell by an average of 4% per year for all types of firms in the 1984 and 1989 ASM panels. This growth rate can be seen at the intersection of the *Overall* row and T*otal* column of the E*mployment* outcome section. Focusing on the O*verall* row, it can be seen that the 4% decline can be decomposed into the four types of firms. Employment growth was due to births (3% growth rate) and growing establishments (6% growth rate). The employment declines are due to establishment deaths

[4] For the counts, the "growers" and "shrinkers" are defined by the changes in employment.

(-4%) and shrinking establishments (-9%). Each of the four growth rates can be further decomposed. The components of the employment growth rate for births can be seen in the *Birth* column. The birth employment growth rate for non-zones fell from an average of just under 4% a year in years prior to designation to an average of just over 3% a year post designation. For the enterprise zones, the average employment growth rate started at a lower pre-designation level (2% a year) and then increased to 3% a year. Payroll also showed a similar pattern of a post-designation decline in the birth rate for non-zones and a post-designation increase for zones. Shipments had a post-designation decline for both non-zones and zones. For capital spending and establishment counts, both non-zones and zones saw post designation jumps in the birth rates.

To determine whether any of the pre- to-post-designation differences between the zones and non-zones are significant, the following regression model is estimated:

$$G_{it} = \delta_0 + \delta_1 NONEZAFT + \delta_2 EZPRE + \delta_3 EZAFT + \varepsilon_{it} \quad \textbf{(4)}$$

where G_{it} is the growth rate in ZIP i in year t, *NONEZAFT* is a dummy variable equal to 1 if the ZIP is a non-zone ZIP after zone designation and 0 otherwise, *EZPRE* is a dummy variable equal to 1 if the ZIP is a zone ZIP prior to designation and 0 otherwise, and *EZAFT* is a dummy variable equal to 1 if the ZIP is a zone ZIP post designation and 0 otherwise. The coefficient on *NONEZAFT*, δ_1, represents change in the growth rates of non-zones post-designation. The change in growth rates of zones post-designation can be calculated (δ_3 - δ_2). The difference in these two changes is the difference-in-difference estimate.

For the births, deaths, growers and shrinkers, Equation 4 is estimated with negative binomial regressions. The changes in employment, shipments, etc. can be thought of as counts of the number or new or destroyed jobs, etc. These distributions tend to be skewed and are not appropriately modeled by ordinary least squares. Poisson regressions are a natural choice. However, there are more ZIPs with zero growth due to births, deaths, growing, or shrinking establishments than would be predicted by a Poisson. The negative binomial generalizes the Poisson by allowing for additional variation among ZIPs that could account for these zeros. The dependent variable in these regressions is the change in the outcome, such as the change in

employment for a ZIP.[5] The "exposure" variable is the total lagged value, such as lagged total employment.

For the total (not decomposed) growth rates, tobit regressions were estimated. The negative binomial is not appropriate for these regressions because the "counts" are both positive and negative. The tobits provide a useful way of dealing with extreme observations. Growth rates are never lower than -1, and tobit regressions are an appropriate approach to censored data (Maddala, 1983). Beyond the left censor of –1, we also right censored the data at 1. Only a small fraction of the ZIP codes had average annual growth rates that more than doubled from one year to the next.

Table 14 reports the differences ($\delta_3 - \delta_2$) and δ_1 and from the negative binomial regressions, as well as the difference in those differences. These differences can be interpreted as percentage changes. ($\delta_3 - \delta_2$) is reported in the *EZ* rows, δ_1 is reported in the *Non-EZ* rows, and the difference-in-difference estimate, ($\delta_3 - \delta_2$) - δ_1, is reported in the *Difference* rows. A Wald test is used to test whether the differences are significantly different from zero.

As an example, again consider employment growth. The entries for *Employment* in the *Total* column indicate that the change in the average employment growth rate fell by 3.1% for the zones and fell by 2.7% for the comparison areas post-designation. The entry of -0.004 in the *Difference* row indicates that there is virtually no difference in the changes in the growth rates between the zones and the non-zones.

Analysis lacking the establishment-level data would come to the conclusion that enterprise zones had no impact on employment within the zones. By decomposing the data into the four establishment types, it becomes clear that that conclusion would be incorrect. The employment growth rate due to births grew by 63.2% post-designation in zones, while it fell by 53.9% in the non-zones. The difference in the differences (1.162) is significant at the 0.01 level. Although the zones appeared to impact employment favorably in the zones post-designation, they appeared to stunt the growth of employment in growing establishments in the zones after designation. The growth rate of the growers fell by 11.8% post-designation in the zones, while it jumped by 48.7% in the non-zones. The difference –0.606 is significant at the 0.01 level. Shipments,

[5] The dependent variable is always negative for the "Death" and "Shrink" categories. To allow estimation of the negative binomial, we multiplied the dependent variables by -1. For both categories, all of the estimates of the changes in growth rates were then multiplied by -1 to restore the proper sign.

payroll, and the number of establishments show similar patterns of the zones positively impacting growth rates due to new establishments, but negatively impacting the growth rates due to the growing establishments. Looking at total changes, the zones had significant negative impacts on both shipments and payroll. In both cases, the change in the growth rates fell by more in the zones. For new capital spending, there was no significant total impact, although zones had a significant negative impact both among the births and the growers. Interestingly, zones performed worse after designation in all of the outcome measures except for capital spending (*Total* column). However, for changes in all of the outcomes among new establishments, the zones performed better after designation (*Birth* column). Thus, zones appear to be most successful at encouraging increased business activity among new establishments.

6.3 Geographic comparison group outcomes

In addition to the matched-sample, we also estimated the negative binomial and tobit regressions using comparison groups based upon geography. A five-mile radius was drawn around the centroid of each zone ZIP. All of the non-zone ZIPs were placed within one of two "neighbor" categories – those close neighbors with ZIP centroids within five miles of a zone ZIP centroid (inner-ring) and the far away neighbors with ZIP centroids beyond five miles (outer-ring). This allows us to examine the impact of the zone policies both on close more and distant neighbors.

The distribution of ZIPs into the zone and two neighbor sub-samples is reported in Table 15. This sample contains more treatment (zone) ZIPs than did the matched sample because we did not eliminate any ZIPs based upon propensity scores. As the table clearly shows, the zone ZIP had much higher mean propensity scores than either of the neighbor groups. Also, in every state, the inner-ring had higher mean propensity scores than did the outer ring. Therefore the neighbor comparison ZIPs are not as similar to the zone ZIPs as are the matched sample ZIPs. Table 16 presents the ZIP and per-establishment means of the five outcome variables.

Table 17 presents the ZIP code pre- and post-designation growth rates broken down by establishment type and enterprise zone status for the zones and two neighbor sub-samples. The designation dates for the comparison ZIPs are the designation dates of the closest zone ZIP codes. As with the matched sample, it is more illuminating to examine the changes in the growth rates and the differences in those changes. These are presented in Table 18 in the form of negative binomial and tobit regression results. For each outcome variable, the first *Difference*

row corresponds to the difference-in-difference estimator for the differences between zones and the inner-rings, and the second *Difference* row corresponds to the difference between zone and outer-ring ZIP growth rate differences. For employment, only three significant differences arise. As can be seen in the *Total* column, the outer-ring ZIPs had a significantly smaller decline in the growth rate of employment post-designation than did the zone ZIPs. Further, the zone ZIPs performed significantly worse than the inner-ring ZIPs among growing establishments, and the zone ZIPs performed significantly worse than the outer-ring ZIPs among the new establishments. Both sets of neighbors performed better than the zone ZIPs in shipments and payroll growth post-designation (*Total* column). With capital spending, the total differences were not significant, but the inner- and outer-rings outperformed the zone ZIPs among spending growth for deaths and growers. The inner-ring also significantly outperformed the zone ZIPs for births. Finally, there were significantly more births in the zone ZIPs attributable to zone policies than in the outer ring.

Taking a broad look at the impact of zones on the zone ZIPs relative to post-designation outcomes of the neighbors, it is clear that zones are not simply displacing economic activity from nearby areas. If that were the case, there would be a much larger positive impact on the zone ZIPs relative to the impact on the inner-ring of ZIP codes. As can be seen in Table 18, that is not the case.

7. Conclusion

We find that California, Florida, New Jersey, New York, Pennsylvania and Virginia placed their enterprise zones in the most distressed ZIP codes of their largest MSAs. To measure the impact of the enterprise zones on manufacturing business outcomes in those distressed urban areas, a carefully selected set of comparison ZIP codes was selected. In the first case, every zone ZIP was matched to the most similar non-zone ZIP in the same state. In the second case, comparison areas were selected based upon geography. Using the treatment zone ZIPs and comparison non-zone ZIPs, difference-in-difference estimates were calculated to measure the differences in pre and post designation growth rates between the zones and comparison areas.

Based on the matched sample difference-in-difference estimates, we found that zones lead mostly to a churning of economic activity. Zones did lead to new business activity inside the zones. The number of births and employment, payroll, and shipments due to those births all increased significantly in the zones post-designation. However, zones appeared to be less

successful at retaining existing activity. Among existing growing establishments, employment, shipments, payroll, and capital spending all grew significantly more rapidly in the matched comparison areas. The estimates based upon the geographic comparison groups do not provide evidence of a zero-sum game stealing of businesses.

With regard to the factors of production, the results were also mixed. Although all six states' zone programs contain capital subsidy provisions, capital spending grew faster in the comparison areas than in the zones both in new and ongoing manufacturing establishments. Five of the states (all but Pennsylvania) subsidize labor as part of their zone programs. Payroll did increase in zones relative to the non-zones in new establishments, but it fell in ongoing establishments. Therefore, it appears the decline in zone employment in ongoing establishments was not offset by a shift to higher wage jobs.

Prior research on enterprise zones has been inconclusive. A number of studies using survey results have shown that zones have created many new jobs. On the other hand, more analytic studies using comparison samples have attributed much less employment growth to zone programs. The regression results in this paper are consistent with both sets of previous findings. By attributing the employment changes to plants that are births, deaths, growing or shrinking establishments, we show that zones have different impacts on the different types of establishments. Consistent with some other econometric results, we find that zones have no impact on overall employment growth. Consistent with the survey results, we find that zones do have an impact on employment growth among new establishments. However, that employment growth is offset by employment losses among ongoing establishments. Findings for shipments, payroll, capital spending, and number of establishments are similar.

There are a number of possible explanations for these findings. Perhaps the new businesses are merely displacing previously existing businesses. Another explanation is politics: local politicians and policy professionals are eager to trumpet new jobs and activity in the zones as evidence of success. This evidence of "success" serves to help to continue or expand the programs. Jobs lost in the zones are often unlikely to be attributed to the zone policies. Because of this, the zone incentives may be targeted more towards new establishments rather than towards existing establishments. If the zone incentives are then marketed more towards attracting new establishments, existing establishments may not be aware of all of the programs'

incentives. Finally, it may be that the zone programs are replacing economic development initiatives that are better suited for existing establishments.

Future research should seek to identify both the particular aspects of the zone programs that appear to be helping new establishments and the particular incentives that are hurting existing businesses. In particular, it will be important to distinguish whether the programs are inherently biased towards new establishments, or whether the programs can be successfully modified to help the incumbent businesses. It will be important to attempt to identify why the programs are failing to help existing firms to expand employment, shipments, payroll, and spending. Unfortunately, for the six states studied in this paper, not enough policy heterogeneity exists to be able to separate the impacts of particular program features.

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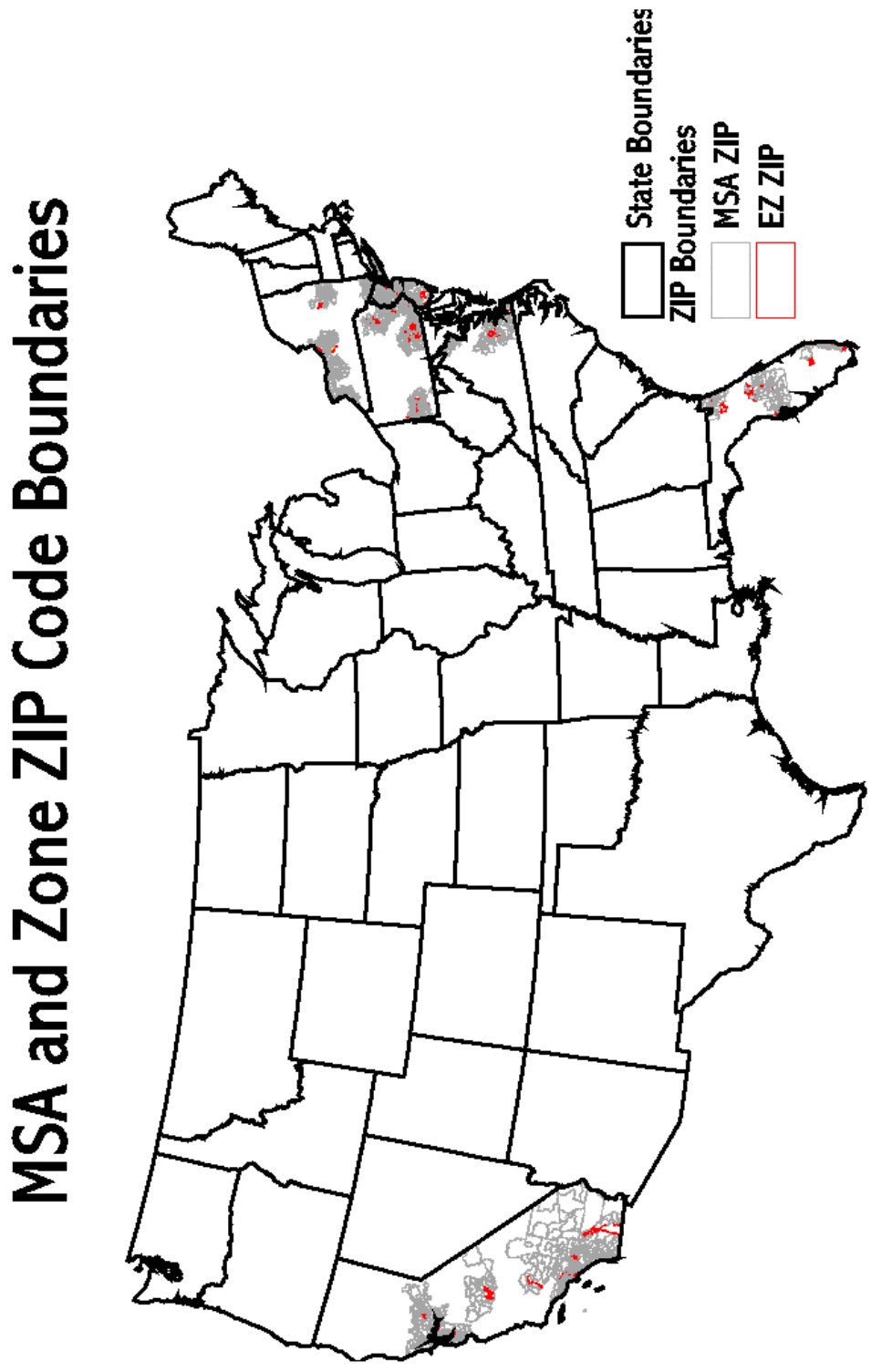

Figure 1. ZIP code boundaries

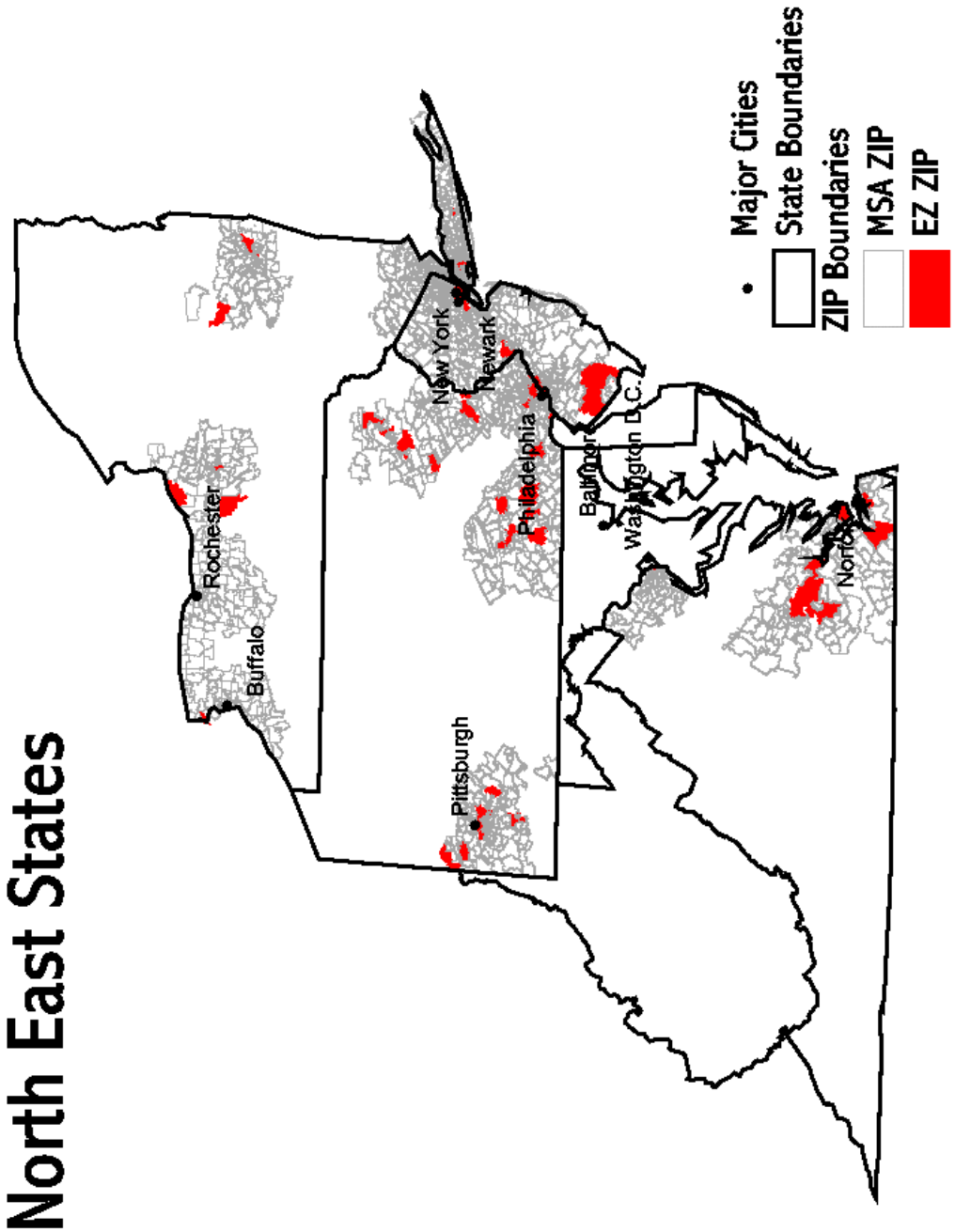

Figure 2. Northeast States

Table 1. MSAs

MSA	Population	ZIPs	EZs[1]
Albany-Schenectady-Troy, NY	874,304	78	1
Allentown-Bethlehem-Easton, PA	686,688	56	7
Bakersfield, CA	543,477	23	3
Buffalo--Niagara Falls, NY	1,189,288	78	3
Fresno, CA	667,490	43	6
Harrisburg-Lebanon-Carlisle, PA	587,986	49	8
Jacksonville, FL	906,727	42	7
Lakeland-Winter Haven, FL	405,382	21	2
Lancaster, PA	422,822	40	5
Los Angeles-Riverside-Orange County, CA	14,531,529	469	57
Miami-Fort Lauderdale, FL	3,192,582	119	30
New York, Northern NJ, LI, NY-NJ-CT	17,125,398	807	32
Norfolk-Virginia Beach-Newport News, VA	1,396,107	64	16
Orlando, FL	1,072,748	46	5
Philadelphia-Wilmington-Atlantic City, PA-MD-NJ	5,457,399	329	36
Pittsburgh--Beaver Valley, PA	2,242,798	201	25
Richmond-Petersburg, VA	865,640	59	10
Rochester, NY	1,002,410	91	0
Sacramento, CA	1,481,102	93	14
San Diego, CA	2,498,016	94	7
San Francisco-Oakland-San Jose, CA	6,253,311	263	16
Scranton--Wilkes-Barre--Hazleton, PA	734,175	77	14
Stockton-Lodi, CA	480,628	18	0
Syracuse, NY	659,864	66	6
Tampa-St. Petersburg-Clearwater, FL	2,067,959	83	10
Washington, DC-MD-VA	3,923,574	198	5
West Palm Beach-Boca Raton, FL	863,518	31	6
York, PA	417,848	44	4

[1] Number of ZIP codes that contain an enterprise zone.

Table 2. Zone Starting Dates by State
Urban Enterprise Zones

STATE	FIRST	MEAN	SD	Number of ZIPs
California	1986	1988.3	2.5	103
Florida	1986	1986.0	0.0	60
New Jersey	1984	1984.7	0.5	31
New York	1987	1987.3	0.4	23
Pennsylvania	1983	1986.8	3.4	87
Virginia	1984	1987.6	4.3	28

Table 3. Variable definitions

Variable	Description	Mean (SE)[1]
	Census Variables in 1980	
PopDen80	Population density (people per square km)	2021.0 (4101.2)
PerCap Inc80	Per capita income (1992 dollars)	12,863.1 (3575.3)
Poverty80	Poverty rate	0.116 (0.076)
%Unempl80	Unemployment rate	0.064 (0.028)
%HS Dipl80	Percent of individuals over 25 with a high school diploma	0.518 (0.092)
%Black80	Percent of individuals who are black	0.124 (0.165)
%Hispanic80	Percent of individuals who are Hispanic	0.099 (0.122)
HousVal80	Average housing value (1992 dollars)	116,317.7 (50,548.2)
Rent80	Average rent (1992 dollars)	465.4 (103.0)
%Own Occ80	Percent of occupied units that are owner occupied	0.461 (0.188)
	Business variables in 1982	
EmpDens82	Employment density (thousands of workers per square km)	0.145 (5.817)
Employ82	Total employment (workers per establishment)	54.3 (115.2)
%ProdWk82	Percentage of production workers	0.703 (0.149)
ProdWage82	Production worker hourly wage (1992 dollars)	11.2 (6.5)
ShipValue82	Value of shipments per employee (thousands of 1992 dollars)	123.6 (138.5)
ValAdd82	Value added per employee (thousands of 1992 dollars)	58.5 (47.4)
CostCon82	Cost of contract work per employee (thousands of 1992 dollars)	3.274 (9.688)
NewBuild82	New building expenditures per employee (thousands of 1992 dollars)	0.886 (3.924)
NewMach82	New machinery expenditures per employee (thousands of 1992 dollars)	3.276 (9.473)
BRent82	Building rents per employee (thousands of 1992 dollars)	0.246 (0.441)
Energy82	Energy intensity	0.022 (0.030)
Klr	Capital intensity (1992 dollars)	37.3 (59.1)
	Other variables	
EZ	Enterprise zone status of ZIP (=1 if ever a zone and 0 otherwise)	0.106 (0.308)
MEmp2yr	Manufacturing employment change 2 years prior to first zone	0.044 (0.560)
MBus2yr	Manufacturing establishment change 2 years prior to first zone	0.076 (0.291)

[1] The means and standard errors are calculated at the ZIP code level.

Table 4. Means of 1980 Census Variables by Zone Status

VARIABLE	NON-ZONE	ZONE	DIFFERENCE
PopDen80	1892.187	3102.388	-1210.201***
	(4117.950)	(3794.195)	
PerCap Inc80	13051.550	11281.530	1770.020***
	(3644.272)	(2413.169)	
Poverty80	0.111	0.159	-0.048***
	(0.074)	(0.075)	
%Unempl80	0.063	0.077	-0.014***
	(0.028)	(0.025)	
%HS Dipl80	0.523	0.468	0.055***
	(0.092)	(0.076)	
%Black80	0.117	0.188	-0.071***
	(0.163)	(0.172)	
%Hispanic80	0.093	0.150	-0.057***
	(0.116)	(0.151)	
HousVal80	118553.700	97638.440	20915.260***
	(51865.920)	(32257.240)	
Rent80	471.825	411.333	60.492***
	(104.485)	(68.988)	
%Own Occ80	0.467	0.409	0.058***
	(0.191)	(0.151)	
N	2897	345	

*P-value 0.1 **P-value 0.05 ***P-value 0.01
Standard errors are in parenthesis.

Table 5. Means of Establishment and Employment Change by Zone Status

VARIABLE	NON-ZONE	ZONE	DIFFERENCE
MEmp2yr	0.051	-0.018	0.069
	(0.757)	(0.383)	
MBus2yr	0.093	0.017	0.076***
	(0.355)	(0.208)	
N	2458	313	

*P-value 0.1 **P-value 0.05 ***P-value 0.01
Standard errors are in parenthesis.

Table 6. Means of 1982 Business Variables by Zone Status

VARIABLE	NON-ZONE	ZONE	DIFFERENCE
EmpDens82	0.162	0.008	0.154
	(6.154)	(0.047)	
Employ82	50.913	82.433	-31.520***
	(107.977)	(161.269)	
%ProdWk82	0.702	0.713	-0.011*
	(0.153)	(0.107)	
ProdWage82	11.075	11.889	-0.814***
	(6.730)	(3.741)	
ShipValue82	121.149	143.915	-22.765**
	(135.623)	(159.732)	
ValAdd82	58.170	60.907	-2.737
	(48.569)	(36.061)	
CostCon82	3.340	2.723	0.617*
	(10.082)	(5.335)	
NewBuild82	0.830	1.355	-0.525
	(3.619)	(5.871)	
NewMach82	3.234	3.627	-0.392
	(9.855)	(5.296)	
BRent82	0.252	0.198	0.054***
	(0.461)	(0.200)	
Energy82	0.022	0.026	-0.004**
	(0.030)	(0.031)	
Klr	36.185	46.651	-10.466***
	(58.535)	(63.310)	
N	2897	345	

*P-value 0.1 **P-value 0.05 ***P-value 0.01
Standard errors are in parenthesis.

Table SEQ Table * ARABIC 7 . Change

OVERALL

NON-ZONE

ZONE

DIFFERENCE

Census Variable Changes: 1980-1990

Population density	
	93.977
	86.195
	159.317
	-73.121
Per capita income	
	5691.564
	5852.201
	4343.614
	1508.587
Poverty	
	-0.008
	-0.009
	0.002
	-0.011
Unemployment	
	-0.005
	-0.006
	0.000
	-0.006
High school grad.	
	0.003
	0.002
	0.004
	-0.002
Percent black	

0.003
0.002
0.008
-0.006

Percent Hispanic

0.019
0.018
0.025
-0.007

Housing values

62382.570
64517.450
44560.950
19956.500

Rent

91.934
94.929
66.829
28.100

Owner occupancy
0.032
0.034
0.015
0.019

Business Variable Changes: 1982-1992

Employment density

-0.114
-0.127
-0.002
-0.125

Employment

-15.609
-14.334

	-26.317
	11.983
Production workers %	
	-0.069
	-0.072
	-0.051
	-0.021
Prod. worker wages	
	-0.267
	-0.191
	-0.899
	0.708
Value of shipments	
	2.231
	1.868
	5.255
	-3.386
Value added	
	6.033
	5.468
	10.748
	-5.280
Cost of contract work	
	-0.058
	-0.090
	0.212
	-0.302
New building expend.	
	-0.275
	-0.216
	-0.773
	0.557
New Machine expend.	
	-0.370
	-0.387
	-0.229
	-0.158
Building rents	

	0.777
	0.790
	0.669
	0.122
Energy intensity	
	-0.004
	-0.003
	-0.006
	0.003
Capital intensity	
	6.529
	6.693
	5.159
	1.534

Table 8. Probability of Zone Designation
Stepwise Probit Regressions Estimates

Variable	CA	FL	NJ	NY	PA	VA
CENSUS VARIABLES IN 1980						
Log PopDen80	0.192***	0.202***	0.348***	0.172***	0.310***	0.394***
	(0.049)	(0.056)	(0.113)	(0.055)	(0.071)	(0.139)
Poverty80	0.249***					
	(0.058)					
%Unempl80	-6.458					
	(4.915)					
%HS Dipl80	-4.903**					
	(1.984)					
	(1.184)					
%Hispanic80		3.938***				
		(0.956)				
Log HousVal80	-0.508**		-0.712*			-2.475***
	(0.244)		(0.426)			(0.671)
Log Rent80	-0.772	-1.737***	-2.409***	-1.584***	-1.205**	
	(0.536)	(0.589)	(0.862)	(0.534)	(0.503)	
%Own Occ80	1.210**	1.260*	1.738**		-1.522***	
	(0.568)	(0.763)	(0.833)		(0.570)	
BUSINESS VARIABLES IN 1982						
Log EmpDens82			-0.716***		-0.423***	-0.440*
			(0.169)		(0.102)	(0.268)
Log Employ82	0.185***		1.774***		0.850***	0.903***
	(0.063)		(0.314)		(0.151)	(0.284)
%ProdWk82			3.138**		1.704**	
			(1.437)		(0.870)	
ValAdd82			-0.019**			
			(0.008)			
NewBuild82	0.016*		-0.387**			
	(0.010)		(0.177)			
NewMach82			0.065			
			(0.043)			
BRent82		-1.619***				
		(.628)				
Energy82					6.442**	
					(2.665)	
OTHER VARIABLES						
MBus2yr		-1.284***				
		(0.359)				
Constant	8.250**	7.932**	6.000	6.492**	-2.222	18.898
	(3.402)	(3.481)	(4.682)	(3.229)	(3.148)	(6.997)
Log Likelihood	-227.2	-109.6	-65.7	-83.3	-129.2	-36.7
N	792	276	450	608	482	142

*P-value 0.1 **P-value 0.05 ***P-value 0.01
Standard errors are in parenthesis. The dependent variable is EZ (=1 if zone, 0 else).
Not "loaded": Log PerCap Inc80, %Black80, ProdWage82, ShipValue82, CostCon82, Klr

Table 9. Correlation of Predicted Zone Status[1]

	California	Florida	New Jersey	New York	Pennsylvania	Virginia
California	1.0000					
Florida	0.6156	1.0000				
New Jersey	0.5442	0.3987	1.0000			
New York	0.7871	0.6153	0.5087	1.0000		
Pennsylvania	0.6522	0.5020	0.7557	0.6655	1.0000	
Virginia	0.7310	0.4511	0.7190	0.6512	0.7946	1.0000

[1] The estimated coefficients from each state that are reported in Table 8 are used to create six predicted designation probabilities for each ZIP code. The table entries give the correlation of the predicted values for all of the ZIPs using the coefficients corresponding to the row and column labels.

Table 10. Distribution of ZIP Codes in Predicted Zone Designation Categories[1]

	Eliminated Sub-sample		Treatment/Comparison Sub-sample		Eliminated Sub-sample	
	Low pr(EZ)		Middle pr(EZ)		High pr(EZ)	
STATE	No Zone	Zone	No Zone	Zone	No Zone	Zone
California	0.004	0.002	0.110	0.255	0.678	0.748
# of ZIPs	120	1	599	85	7	17
Florida	0.006	0.017	0.194	0.344	0.660	0.808
# of ZIPs	39	1	175	49	2	10
New Jersey	0.001	0.004	0.092	0.277	0.539	0.703
# of ZIPs	236	1	193	22	4	9
New York	0.004	0.008	0.044	0.072	0.213	0.166
# of ZIPs	171	1	423	20	6	1
Pennsylvania	0.002	0.011	0.139	0.412	0.771	0.888
# of ZIPs	163	1	263	67	5	5
Virginia	0.012	0.068	0.227	0.271	0.881	0.798
# of ZIPs	85	1	45	12	1	10

[1]Table entries are average pr(EZ) (predicted probability of zone designation) and number of ZIP codes.

Table 11. Mean Predicted Zone Designation Probability
Matched Sample

	Non-Enterprise Zone			Enterprise Zone		
State	N	Mean	Std. Dev.	N	Mean	Std. Dev.
California	85	0.255	0.141	85	0.255	0.141
Florida	49	0.346	0.162	49	0.344	0.159
New Jersey	22	0.276	0.143	22	0.277	0.144
New York	20	0.072	0.034	20	0.072	0.034
Pennsylvania	67	0.411	0.193	67	0.412	0.195
Virginia	12	0.267	0.100	12	0.271	0.105

Table 12. Dependent Variable Definitions
Matched Sample: 1984-1993

		Zip Code	Per-Establishment
Variable[1]	Description	Mean (SE)	Mean (SE)
Employment	Number of employees	5508.154 (5011.408)	79.667 (202.677)
Shipments	Value of shipments (thousands of 1992 dollars)	779,572.062 (799,898.312)	12,087.981 (40,899.145)
Payroll	Mean production worker hourly wage times employment (1992 dollars)	67,072.234 (69,013.281)	11.889[2] (3.477)
Capital Spending	New building and machinery expenditures (thousands of 1992 dollars)	21,527.137 (30,669.648)	386.441 (1330.974)
Number of Establishments	Number of manufacturing establishments	27.708 (44.939)	1 (0)

[1] All variables are weighted by the inverse probability of selection into an ASM panel.
[2] The Per-Establishment mean for payroll is the mean production worker wage.

Table 13. Annual Growth Rates by Zone and Establishment Status
Matched Sample: 1984-1993[6]

Outcome[9]	Zone Status	Designation Status[1]	Establishment Type Birth[2]	Death[3]	Grow[4]	Shrink[5]	Total[8]
Employment	Non-EZ	Pre	0.039	-0.034	0.051	-0.080	-0.025
		Post	0.032	-0.043	0.057	-0.100	-0.054
	EZ	Pre	0.022	-0.026	0.074	-0.083	-0.013
		Post	0.031	-0.040	0.059	-0.095	-0.046
	Overall		0.031	-0.038	0.059	-0.093	-0.040
Shipments	Non-EZ	Pre	0.037	-0.034	0.076	-0.085	-0.006
		Post	0.028	-0.034	0.078	-0.088	-0.016
	EZ	Pre	0.025	-0.023	0.105	-0.078	0.030
		Post	0.022	-0.031	0.073	-0.092	-0.028
	Overall		0.027	-0.031	0.080	-0.088	-0.012
Payroll	Non-EZ	Pre	0.039	-0.034	0.065	-0.103	-0.034
		Post	0.026	-0.033	0.078	-0.124	-0.053
	EZ	Pre	0.017	-0.019	0.105	-0.098	0.006
		Post	0.024	-0.037	0.074	-0.122	-0.061
	Overall		0.026	-0.032	0.079	-0.116	-0.043
Capital Spending	Non-EZ	Pre	0.025	-0.024	0.295	-0.341	-0.046
		Post	0.030	-0.019	0.301	-0.373	-0.061
	EZ	Pre	0.015	-0.009	0.349	-0.378	-0.023
		Post	0.023	-0.024	0.307	-0.349	-0.043
	Overall		0.024	-0.020	0.309	-0.359	-0.046
Number of Establishments[7]	Non-EZ	Pre	0.035	0.064	0.497	0.439	0.972
		Post	0.038	0.085	0.512	0.408	0.958
	EZ	Pre	0.027	0.060	0.517	0.422	0.967
		Post	0.040	0.088	0.485	0.432	0.957
	Overall		0.037	0.080	0.501	0.423	0.960

[1] Designation status distinguishes between observations prior to and post-zone designation (or the matched ZIP's designation date for non-zone ZIPs).
[2] A "birth" is an establishment that has positive employment in the current year, but had zero employment in the previous year.
[3] A "death" is an establishment that has zero employment in the current year, but had positive employment in the previous year.
[4] "Grow" refers to establishments in the current year that have had stable or positive total employment (shipments/payroll/capital spending) growth from the previous year.
[5] "Shrink" refers to establishments in the current year that had greater total employment (shipments/payroll/capital spending) in the previous year.
[6] No births, deaths, "growing" or "shrinking" establishments are recorded for the first year of an ASM panel (1984 and 1989).
[7] For the establishment counts, "Grow" and "Shrink" are based on employment growth.
[8] "Total" refers to average annual growth rates for all firms.
[9] Means are weighted by lagged employment (shipments/payroll/capital spending/number of establishments).

Table 14. Change in Average Annual Growth Rates After Zone Designation by Zone and Establishment Status Matched Sample: 1984-1993

Outcome	Zone Status	Establishment Type Birth[1]	Death[1,3]	Grow[1]	Shrink[1,3]	Total[2]
Employment	EZ	0.623	-0.395	-0.118	-0.007	-0.031
	Non-EZ	-0.539	-0.669	0.487	-0.003	-0.027
	Difference	*1.162***	*0.273*	*-0.606****	*-0.005*	*-0.004*
Shipments	EZ	0.272	-0.414	0.000	-0.027	-0.056
	Non-EZ	-0.977	-0.614	0.957	0.093	-0.005
	Difference	*1.249****	*0.200*	*-0.957****	*-0.121*	*-0.051****
Payroll	EZ	0.475	-0.437	0.026	-0.021	-0.063
	Non-EZ	-0.726	-0.687	0.443	0.041	-0.013
	Difference	*1.201****	*0.250*	*-0.417****	*-0.062*	*-0.050****
Capital Spending	EZ	0.281	-0.817	-0.076	0.050	0.028
	Non-EZ	1.394	-0.616	0.673	-0.009	-0.019
	Difference	*-1.113****	*-0.201*	*-0.749****	*0.060*	*0.047*
Number of Establishments	EZ	0.480	0.394	-0.035	-0.008	-0.032
	Non-EZ	0.120	0.431	0.003	-0.067	-0.044
	Difference	*0.360***	*-0.037*	*-0.037*	*0.059*	*0.012*

*P-value 0.1 **P-value 0.05 ***P-value 0.01

[1] Table entries for "EZ" and "Non-EZ" represent the coefficients $(\delta_3 - \delta_2)$ and δ_1 respectively from the negative binomial regressions of the change in employment (shipments/payroll/capital spending/number of establishments) regressed on a set of dummy variables measuring the timing of zone designation:

$G^j{}_{it} = \boldsymbol{d}_0 + \boldsymbol{d}_1 NONEZAFT + \boldsymbol{d}_2 EZPRE + \boldsymbol{d}_3 EZAFT + \boldsymbol{e}_{it}$ "Difference" is the difference between the change in the EZ and non-EZ growth rates: $(\delta_3 - \delta_2) - \delta_1$. Significance levels refer to the results of a Wald test testing the null hypothesis that differences are equal:
H_0: $(\delta_3 - \delta_2) - \delta_1 = 0$.

[2] The table entries for the "Total" column represent the results of Tobit regressions.

[3] The dependent variable in the "Death" and "Shrink" regressions is always negative. In order to estimate the negative binomial, the dependent variables were multiplied by -1. Therefore, the reported coefficients in these regressions were multiplied by -1.

Table 15. Mean Predicted Zone Designation Probability
Neighbor Sample

STATE	Enterprise Zone N	Enterprise Zone Mean (SE)	Inner-Ring[1] N	Inner-Ring[1] Mean (SE)	Outer-Ring[2] N	Outer-Ring[2] Mean (SE)
California	103	0.334 (0.229)	199	0.162 (0.165)	536	0.073 (0.097)
Florida	60	0.416 (0.235)	83	0.233 (0.180)	141	0.122 (0.123)
New Jersey	32	0.389 (0.245)	88	0.097 (0.136)	353	0.034 (0.085)
New York	22	0.074 (0.041)	186	0.063 (0.044)	414	0.022 (0.027)
Pennsylvania	73	0.439 (0.229)	157	0.186 (0.209)	276	0.042 (0.080)
Virginia	23	0.491 (0.298)	42	0.200 (0.192)	90	0.042 (0.094)

[1] Inner-ring refers to ZIPs within five miles of a zone ZIP.
[2] Outer-ring refers to ZIPs more than five miles away from a zone ZIP.

Table 16. Dependent Variable Definitions
Neighbor Sample: 1984-1993

Variable[1]	Description	Zip Code Mean (SE)	Per-Establishment Mean (SE)
Employment	Number of employees	5403.886 (6691.156)	75.656 (151.030)
Shipments	Value of shipments (thousands of 1992 dollars)	819,053.438 (1,272,566.4)	12,381.003 (34,901.691)
Payroll	Mean production worker hourly wage times employment (1992 dollars)	67,850.562 (102,598.094)	12.023[2] (4.572)
Capital Spending	New building and machinery expenditures (thousands of 1992 dollars)	23,602.326 (58,053.508)	399.165 (1515.914)
Number of Establishments	Number of manufacturing establishments	21.874 (4.600)	1 (0)

[1] All variables are weighted by the inverse probability of selection into an ASM sample.
[2] The Per-Establishment mean for payroll is the mean production worker wage.

Table 17. Annual Growth Rates by Zone and Establishment Status
Neighbor Sample: 1984-1993[1]

Outcome	Zone Status	Designation Status	Establishment Type				
			Birth	Death	Grow	Shrink	Total
Employment	Inner-Ring	Pre	0.030	-0.044	0.066	-0.080	-0.027
		Post	0.037	-0.052	0.067	-0.095	-0.043
	Outer-Ring	Pre	0.033	-0.041	0.064	-0.079	-0.023
		Post	0.035	-0.040	0.060	-0.088	-0.033
	EZ	Pre	0.020	-0.025	0.066	-0.081	-0.019
		Post	0.029	-0.042	0.058	-0.090	-0.045
	Overall		0.033	-0.043	0.063	-0.088	-0.034
Shipments	Inner-Ring	Pre	0.027	-0.039	0.086	-0.084	-0.011
		Post	0.032	-0.040	0.083	-0.100	-0.025
	Outer-Ring	Pre	0.029	-0.033	0.078	-0.088	-0.014
		Post	0.031	-0.031	0.085	-0.087	-0.001
	EZ	Pre	0.017	-0.018	0.086	-0.074	0.011
		Post	0.021	-0.033	0.071	-0.092	-0.033
	Overall		0.028	-0.033	0.082	-0.089	-0.013
Payroll	Inner-Ring	Pre	0.023	-0.033	0.084	-0.279	-0.204
		Post	0.033	-0.044	0.112	-0.132	-0.031
	Outer-Ring	Pre	0.033	-0.040	0.092	-0.104	-0.019
		Post	0.033	-0.034	0.087	-0.108	-0.023
	EZ	Pre	0.015	-0.019	0.091	-0.089	-0.001
		Post	0.022	-0.037	0.071	-0.114	-0.057
	Overall		0.030	-0.037	0.091	-0.125	-0.040
Capital Spending	Inner-Ring	Pre	0.026	-0.041	0.350	-0.341	-0.006
		Post	0.030	-0.030	0.311	-0.362	-0.050
	Outer-Ring	Pre	0.037	-0.032	0.321	-0.335	-0.008
		Post	0.039	-0.024	0.285	-0.348	-0.048
	EZ	Pre	0.012	-0.007	0.306	-0.333	-0.021
		Post	0.024	-0.029	0.311	-0.327	-0.021
	Overall		0.033	-0.027	0.305	-0.345	-0.034
Number of Establishments	Inner-Ring	Pre	0.030	0.060	0.528	0.413	0.971
		Post	0.043	0.098	0.496	0.412	0.950
	Outer-Ring	Pre	0.032	0.078	0.516	0.406	0.954
		Post	0.040	0.080	0.522	0.402	0.965
	EZ	Pre	0.029	0.068	0.501	0.431	0.961
		Post	0.040	0.088	0.485	0.431	0.957
	Overall		0.038	0.084	0.509	0.411	0.958

[1] All terms are as defined earlier. See notes on Table 13 and Table 15.

Table 18. Change in Average Annual Growth Rates After Zone Designation by Zone and Establishment Status Neighbor Sample: 1984-1993

Outcome	Zone Status	Establishment Type Birth[1]	Death[1,3]	Grow[1]	Shrink[1,3]	Total[2]
Employment	EZ	-0.103	-0.443	-0.065	-0.003	-0.025
	Inner-Ring	-0.121	-0.449	0.254	-0.086	-0.017
	Difference	*0.018*	*0.006*	*-0.319****	*0.083*	*-0.008*
	Outer-Ring	0.788	-0.298	0.031	0.003	-0.011
	Difference	*-0.891****	*-0.145*	*-0.096*	*-0.006*	*-0.014**
Shipments	EZ	-0.171	-0.462	0.018	-0.008	-0.044
	Inner-Ring	-0.240	-0.352	0.133	-0.192	-0.012
	Difference	*0.070*	*-0.110*	*-0.115*	*0.184*	*-0.031****
	Outer-Ring	0.938	-0.278	-0.017	0.019	0.011
	Difference	*-1.111****	*-0.184*	*-0.035*	*-0.027*	*-0.055****
Payroll	EZ	0.110	-0.461	0.046	-0.054	-0.054
	Inner-Ring	0.161	-0.461	-0.019	-0.063	0.164
	Difference	*-0.052*	*0.000*	*0.065*	*0.009*	*-0.218****
	Outer-Ring	0.850	-0.308	-0.271	0.024	-0.006
	Difference	*-0.740****	*-0.153*	*0.317****	*-0.078*	*-0.048****
Capital Spending	EZ	0.206	-0.900	-0.210	0.054	-0.006
	Inner-Ring	0.855	-0.371	1.045	-0.035	-0.045
	Difference	*-0.649***	*-0.530**	*-1.256****	*0.090*	*0.040*
	Outer-Ring	0.154	-0.294	0.468	-0.001	-0.044
	Difference	*0.052*	*-0.607***	*-0.678****	*0.056*	*0.038*
Number of Establishments	EZ	0.402	0.284	-0.010	-0.023	-0.004
	Inner-Ring	0.298	0.497	-0.071	0.016	-0.021
	Difference	*0.104*	*-0.213*	*0.061*	*-0.039*	*0.017*
	Outer-Ring	0.167	0.229	-0.015	-0.006	0.011
	Difference	*0.235**	*0.056*	*0.005*	*-0.017*	*-0.014*

*P-value 0.1 **P-value 0.05 ***P-value 0.01

[1] Table entries for "EZ" and "Non-EZ" represent the coefficients ($\delta_3 - \delta_2$) and δ_1 respectively from the negative binomial regressions of the change in employment (shipments/payroll/capital spending/number of establishments) regressed on a set of dummy variables measuring the timing of zone designation:

$G^j{}_{it} = \boldsymbol{d}_0 + \boldsymbol{d}_1 NONEZAFT + \boldsymbol{d}_2 EZPRE + \boldsymbol{d}_3 EZAFT + \boldsymbol{e}_{it}$ "Difference" is the difference between the change in the EZ and non-EZ growth rates: $(\delta_3 - \delta_2) - \delta_1$. Significance levels refer to the results of a Wald test testing the null hypothesis that differences are equal:
H_0: $(\delta_3 - \delta_2) - \delta_1 = 0$.

[2] The table entries for the "Total" column represent the results of Tobit regressions.

[3] The dependent variable in the "Death" and "Shrink" regressions is always negative. In order to estimate the negative binomial, the dependent variables were multiplied by -1. Therefore, the reported coefficients in these regressions were multiplied by -1.